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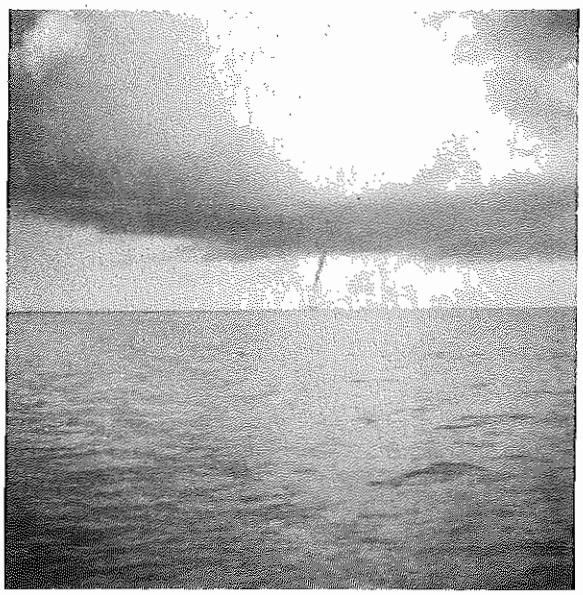
Some notes on Waterspouts Around the Lower Keys



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REGION II TECHNICAL MEMORANDUM NO. 3

SOME NOTES ON WATERSPOUTS AROUND THE LOWER KEYS

Waterspouts and funnel clouds are rather common occurrences around the Florida Keys during the late spring and summer months; however, they seldom reach any more strength than a whirlwind. Most often, they are associated with developing thunderstorms that do not have sufficient size and instability to provide the energy for a true tornado. Limited information indicates winds may be in the range between 35 mph and 80 mph. Certainly, they are to be avoided by boats that can be capsized by the sudden, strong wind and churned-up seas. People on shore face the hazard from flying debris in even the smallest one, even though waterspouts usually dissipate very quickly over land. The increased friction breaks up the accelerated inflow of air into the waterspout. The loss of a supply of water apparently is not a controlling factor in this case. Stronger spouts may pop out tightly-closed car windows or rip roofing-material. Several years ago one moved northward in the vicinity of White Street and Memorial School in Key West damaging trees and houses; then passed into the Gulf along the Seaplane Base. In the early "50s", one moved across Stock Island overturning a housetrailer. Last year, in vicinity of Big Pine, a truck was reported to have been picked up and spun in the opposite direction.

When first forming under a cloud, the funnel is outlined by moisture in the air that is condensed by the lowered pressure within the cyclonic (counter-clock-wise) rotation. It may appear more transparent through its center than along its edges because, even on this scale, there is a small "eye". Once the funnel reaches the sea it becomes a darker spout surrounded by a spreading fountain of spray. Seldom do the spouts that are seen around the Keys lift any significant amount of water into the cloud. Here again, we find the waterspout lacking the inflow and upflow of a tornado. Frequently, there will be more than one spout visible - each whipping, or trailing, under the parent cloud but taking whatever forward motion that cloud may have. Local observations indicate a waterspout is usually near the leading edge of a storm cloud, whereas a tornado is apt to be on the rear. Both are sometimes visible on a weather radar showing different type echoes. Often, it has been noticed that the spout dissipates once the rain from the parent cloud has enveloped it.

There is another type of waterspout that is mentioned in the "Compendium of Meteorology" as being observed in some places. It is the fair-weather waterspout not connected with clouds. Like a dust-devil, it is a low-level whirlwind, rotating in either counter-clock-wise or clockwise direction. It is caused by irregular airflow and very unstable surface air, more the result of high humidity than of high temperature.

The waterspout that is the true tornado at sea and the one that might cause severe damage in the Keys is the type associated with hurricanes. Formerly it was thought that these occurred only on the forward, outer fringes of a hurricane, but now we have evidence that they sometimes occur on the rear and also near the inner portions. A check of raob data over several occurrences revealed that conditionally unstable air will be present. The stability index has no meaning either for showers or thunderstorms since convective heating will not reach the 850 mb. level around Key West.

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